

## CLAIMS

What is claimed is:

1. A dynamoelectric machine comprising:  
  
a stator including a stator winding consisting of five phases, said stator winding inserted in a plurality of slots defining said stator; and  
  
a rotor rotatable within said stator, a rotor composed of more than two flux carrying segments, each segment having  $P/2$  claw poles, wherein  $P$  is an even number.
2. The machine of claim 1, said stator winding is operably connected to a corresponding five-phase rectifier.
3. The machine of claim 2, wherein said five-phase rectifier is a five-phase full-wave rectifier including five diode pairs connected in parallel, each diode pair of said five diode pair including a positive-side diode  $d_1$  and a negative-side diode  $d_2$  connected in series.
4. The machine of claim 1, wherein a coil winding is disposed intermediate each of said more than two flux carrying segments.
5. The machine of claim 4, wherein each coil winding is energized providing a first magnetic polarity on outbound claw poles defining said rotor and a second polarity opposite said first polarity on claw poles intermediate said outbound claw poles.
6. The machine of claim 1, wherein permanent magnets are disposed between said each segment to enhance at least one of output and efficiency.
7. The machine of claim 1, wherein said stator winding consisting of five phases are connected in one of a star connection and a pentagon connection.

8. An alternating current (AC) generator for a motor vehicle comprising:

a stator including a stator winding consisting of five phases, said stator winding inserted in a plurality of slots defining said stator; and

a field rotor composed of more than two flux carrying segments, each segment having  $P/2$  claw poles, wherein  $P$  is an even number.

9. The generator of claim 8, said stator winding is operably connected to a corresponding five-phase rectifier.

10. The generator of claim 9, wherein said five-phase rectifier is a five-phase full-wave rectifier including five diode pairs connected in parallel, each diode pair of said five diode pair including a positive-side diode  $d_1$  and a negative-side diode  $d_2$  connected in series.

11. The generator of claim 8, wherein a field coil winding is disposed intermediate each of said more than two flux carrying segments.

12. The generator of claim 11, wherein each field coil winding is energized providing a first magnetic polarity on outbound claw poles defining said field rotor and a second polarity opposite said first polarity on claw poles intermediate said outbound claw poles.

13. The generator of claim 8, wherein permanent magnets are disposed between said each segment to enhance at least one of output and efficiency.

14. The generator of claim 8, wherein said stator winding consisting of five phases are connected in one of a star connection and a pentagon connection.